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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/566,116

01/24/2006

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270 7590 03/24/2009

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EXAMINER

ZHU, WEIPING

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

03/24/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/566,116	<b>Applicant(s)</b> INOUE ET AL.	
	<b>Examiner</b> WEIPING ZHU	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2,3,14-25 and 37-40 is/are pending in the application.
- 4a) Of the above claim(s) 15-19 and 21-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2, 3, 14, 20 and 37-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 2, 3, 14, 20 and 37-40 are currently under examination, wherein no claim has been amended in applicant's amendment filed on January 12, 2009.

### ***Status of Previous Rejections***

2. All the previous rejections of claims 2, 3, 14, 20 and 37-40 under 35 U.S.C. 103(a) as stated in the Office action dated October 10, 2008 are maintained as follows.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 2, 3, 14, 20, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fan et al. ("Deformation Behavior of Zr-Based Bulk Nanocrystalline Amorphous Alloys", Physical Review B, volume 61, number 6, R3761-R3763, February 1, 2000-II) in view of Hu (US 6,096,640) as stated in the Office action dated October 10, 2008.
4. Claims 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fan et al. in view of Hu ('640) as applied to claims 2 and 37 above and further in view of Kakiuchi et al. ("Application of Zr-Based Bulk Glassy Alloys to Golf Clubs",

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Materials Transactions, Vol. 4, No. 4 (2001) pp. 678 to 681) as stated in the Office action dated October 10, 2008.

### ***Response to Arguments***

5. The applicant's arguments filed on January 12, 2009 have been fully considered but they are not persuasive.

First, the applicant argues that the ingot of Fan et al. is of a very small size relative to the size of a typical sputtering target and that known technology does not permit one of ordinary skill in the art to simply increase the size of the specimen and maintain its characteristics and uniformity because the known technology based on melting and casting is very different from the method of the instant invention based on powder metallurgy. In response, see the reasons for the rejections of the claim limitations on the size and uniformity in the instant claims 2 and 37 as stated in the paragraph 3 of the Office action dated October 10, 2008. It is also noted that Kakiuchi et al. discloses (section 2, page 678) that a 250 mm x 220 mm x 3 mm flat sheet of Zr-based glassy alloy, which is much bigger in size than the claimed size of 100 mm or more in diameter, was produced with satisfactory properties by the clamp forging method mentioned in applicant's declaration under 37 CFR 1.132 filed on September 16, 2008 as one of the methods currently in use. Furthermore, the method of sintering atomized powders as claimed in the instant claims 2 and 37 is well-known in the art of powder metallurgy.

Second, the applicant argues that the sputtering target as disclosed by Hu ('640) is completely different from the metallic glass alloys of Fan et al. and the instant

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invention. In response, the examiner notes the ground of rejection of the claimed metallic glass relies on the teaching of Fan et al. rather than that of Hu ('640), which is only relied upon for meeting the claimed limitation of making an amorphous material into a sputtering target. The amorphous material for the sputtering target as disclosed by Hu ('640) does not have to be the same as the claimed metallic glass.

Third, the applicant argues that Fan et al. provides no description of density. In response, see the reason for the rejection of the claim limitation on the density in the instant claims 2 and 37 as stated in the paragraph 3 of the Office action dated October 10, 2008.

Fourth, the applicant argues that the alloy structure of fine crystals dispersed in an amorphous material as disclosed by Fan et al. is clearly different from the entire alloy structure formed of fine crystals as required by the instant claims 2 and 37. In response, the examiner notes that Fan et al. discloses (abstract) a Zr-based bulk nanocrystalline amorphous alloy  $\text{Zr}_{53}\text{Ti}_5\text{Ni}_{10}\text{Cu}_{20}\text{Al}_{12}$  having an average grain size range of 2.0-2.5 nm being uniform entirely throughout the specimen (Fan et al., the paragraph bridging the left and right columns and Fig. 2, page R3762), which satisfies all the limitations as claimed in instant claims 2 and 37. Furthermore, it is noted that the material as claimed in instant claims 2 and 37 is an amorphous material rather than a crystalline material as asserted by the applicant. The structure of Fan et al. is substantially identical to that of the claimed structure.

Fifth, the applicant argues that the constraints in the conventional methods used by Fan et al. and Kakiuchi et al. would make producing the sputtering target as claimed

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in the instant claims 2 and 37 very difficult. In response, see examiner's responses to the first argument above. Furthermore, as discussed in applicant's declaration under 37 CFR 1.132 filed on September 16, 2008, it appears that a target of the claimed size can be produced by the conventional methods only at much higher costs.

Sixth, the applicant argues that one of ordinary skill in the art would have no common sense reason for forming a sputtering target from a material used to form a golf club as disclosed by Kakiuchi et al. In response, the examiner notes that it would have been obvious to one of ordinary skill in the art that any material of desired composition and structure can be made into the form of a sputtering target. The term "sputtering target" denotes functional language in that whether or not a given material is a sputtering target is dependent upon the material being present in a combination (not presently claimed) capable of depositing a layer of a material on a substrate.

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WZ

3/10/2009

/George Wyszomierski/  
Primary Examiner  
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